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First Description of the Nest, Eggs, and Breeding Behavior of the Mérida Tapaculo (*Scytalopus meridanus*)

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ABSTRACT.—We provide the first description of the nest, eggs, and breeding behavior of the Mérida Tapaculo (*Scytalopus meridanus*). Data are from one pair in the moist cloud forest of Yacambu National Park, Venezuela during April–May 2004. Two nests, constructed by the same pair, were globular in structure and consisted of mossy material placed in a rock crevice of a muddy rock wall. The eggs were cream colored with an average mass of 4.19 g. Clutch sizes were one in the first nest and two in the second. The species showed bi-parental care in nest building and incubation. Nest attentiveness (percent time spent on the nest incubating) averaged 83.4 ± 14% (SD). Average on and off bouts were 33.24 and 6.34 min, respectively. *Received 22 December 2005. Accepted 11 August 2006.*

Breeding biology and life history traits of tropical birds remain poorly known. Nests have not been found nor described for many species limiting our knowledge and understanding of tropical life histories. Of approximately 40 currently recognized species of *Scytalopus*, nests of ~12 species have been described (Sclater and Salvin 1879; Skutch 1972; Stiles 1979; Hilty and Brown 1986; Sick 1993; Krabbe and Schulenberg 1997, 2003; Christian 2001; Young and Zuchowski 2003; Greeney and Gelis 2005; Greeney and Rombough 2005). *Scytalopus* is found throughout the Andes from Central America to Tierra del Fuego Island (Fjeldså and Krabbe 1990, Krabbe and Schulenberg 2003). We present data on life history traits (nest description, clutch size, egg mass, nest building, egg laying, and incubation investment) of *Scytalopus meridanus* in Yacambu National Park, a wet cloud forest of north central Venezuela (09° 42′ N, 69° 42′ W; 1,900 m elevation).

Scytalopus are elusive birds, often only detectable by sound (Hilty et al. 2003, Krabbe and Schulenberg 2003). *Scytalopus meridanus*, a small 16.5-g bird, similar to a wren, is

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known to scuttle on the ground among thick brush and grasses (Hilty et al. 2003). We observed individuals within 30 m of a creek, foraging low to the ground with short, rapid movements. Their call is a series of 25–30 quick sharp monotone 'wick' notes, similar to that of the Northern Flicker (*Colaptes auratus*), repeated for 10–15 sec.

OBSERVATIONS

The first nest, found on 16 April 2004, was 0.8 m above a creek bed in an obscured crevice about 6.25 cm deep into a muddy, rock face. The globular nest was at the end of this crevice and was composed of moss, rootlets, and decomposing leaves. The inside diameter and height were 6.8 and 6.2 cm, respectively, while the outside diameter and height were 10.5 and 8.5 cm, respectively. Incubation had commenced prior to finding the nest and the adults were incubating a single, cream-colored egg of unknown age with a mass of 4.07 g. We monitored the nest for 5 days during the incubation period until it was depredated on 21 April, and videotaped it once for 5.75 hrs (17 Apr, 0705–1345 hrs EST) following Martin (2002). In the video, *S. meridanus* exhibited simultaneous incubation exchange, revealing that both male and female incubate. Nest attentiveness (percent time spent on the nest incubating) averaged 82.2%, while incubation bouts averaged 33.13 min (n = 11); the mean off bout length was 7.26 min (n = 11).

The second nest, a re-nest of the same pair, was located on 4 May 2004 approximately 15 m from the first nest. The nest was 1.2 m above the bottom of the creek bed, in a similarly concealed crevice 7 cm deep, and constructed from similar material. The nest contained one egg when found and, after checking the nest daily for eight days, another egg was laid. The day the second egg was laid (12 May), the eggs of the second nest weighed 4.38 and 4.12 g. We videotaped the nest three times: once during the laying period and twice during incubation, totaling nearly 19 hrs (7 May, 0741–1345; 15 May, 0732–1352; and 23 May, 0711–1346 hrs). The first video revealed that during the laying period, both adults continued to build the nest after one egg had been laid. Both parents repeatedly brought small mossy material to the nest. In addition, both adults appeared to intermittently incubate the single egg, but had an average attentiveness of only 45.2%. This incubation activity occurred only during the cool early hours between 0741 and 0920 hrs. From 0921–1345 hrs, the parents visited the nest only briefly, bringing nesting material, but did not incubate. The two incubation videos revealed that nest attentiveness on the third day of incubation (15 May) and the eleventh day (23 May) was comparable to that of the first nest of unknown incubation age (percent time on = 82.6 and 84.8%, respectively). Mean on and off bout lengths during first and second incubation videos (37.20 min on, 7.34 min off; and 29.38 min on, 4.43 min off, respectively) also were similar to the first nest. We monitored the nest daily for 8 days before the second egg was laid (4–12 May), and for 13 days after (12–25 May), until depredated, at which point the eggs had not yet hatched. The incubation periods documented for other *Scytalopus* are 15–23 days (De Santo et al. 2002, Krabbe and Schulenberg 2003); the period that we monitored this nest is well within this range.

DISCUSSION

Life history traits have been described for only a few other species of *Scytalopus*. Egg color and shape were similar to most other *Scytalopus* described to date, as was clutch size (Stiles 1979, Whitney 1994, De Santo et al. 2002, Krabbe and Schulenberg 2003). Nest composition, placement, and shape were consistent with other tapaculos (Stiles 1979, Whitney 1994, De Santo et al. 2002, Krabbe and Schulenberg 2003, Young and Zuchowski 2003, Greeney and Gelis 2005, Greeney and Rombough 2005). Many tropical birds have been reported to lay eggs on alternating days, some even with three days separating egg laying (Skutch 1976). Unlike any passerine of which we are aware, *S. meridanus* laid a second egg nearly one week after the first. We do not know if this pattern is typical, but may result from the large investment in eggs. Few records report detailed information on parental investment. We observed fairly high nest attentiveness not atypical of shared incubators (Martin 2002; TEM, unpubl. data). *Scytalopus meridanus* is sexually monomorphic and we could not ascertain if parents contributed evenly in nest attentiveness. However, length

TABLE 1. Reproductive attributes (means) of *Scytalopus meridanus* in Venezuela, 2004 (this study) and four other congenors in Central and South America (Krabbe and Schulenberg 2003).

Species	Clutch size	Egg volume (cm^3)	Egg mass (g)	Adult mass (g)	Egg mass/body mass (%)
S. meridanus[a]	1–2	4.064	4.190	16.5	25.39
S. speluncae	2	2.897	2.987[b]	13.75[c]	21.72
S. indigoticus	2	3.006	3.099[b]	14.80[c]	20.94
S. magellanicus	2–3	3.179	3.278[b]	11.00[c]	29.80
S. griseicollis	2	2.531	2.609[b]	17.97[c]	14.52

[a] Sample sizes for *S. meridanus* are: clutch size (2), egg mass/volume (3), and adult mass (1).
[b] Egg mass calculated from measurements reported in Krabbe and Schulenberg (2003) (sample sizes not given) using the equation in Van Noordwijk et al. (1981).
[c] Information from descriptions in Krabbe and Schulenberg (2003) (sample sizes not given).

of alternating bouts of different individuals appeared similar.

Scytalopus meridanus laid remarkably large eggs relative to the size of the 16.5-g adult (Martin et al. 2006), about 25% of its body weight. We could not locate egg mass records for other species of *Scytalopus*, but egg length and width measurements as well as adult mass were available for four species (Krabbe and Schulenberg 2003). We developed a relative coefficient (1.031) between mass and volume using egg length, width, and mass measurements from nine passerine species in Argentina (TEM, unpubl. data) to estimate egg mass. We inserted this coefficient to get the equation: mass = $(0.5 \times \text{length} \times \text{width}^2) \times 1.031$ (adapted from Van Noordwijk et al. 1981). All five *Scytalopus* species appear to have relatively high reproductive investment in eggs, given their body mass (Table 1). The allometric relationship across other species in Venezuela (Martin et al. 2006) predicts an average egg mass of approximately 2.6 g based on the 16.5-g body mass of adult *Scytalopus meridanus*. This predicted egg mass is much less than that observed and indicates that *Scytalopus* lays a large egg, even compared with other tropical species.

Scytalopus joins the ranks of other species in endemic tropical families by having small clutch size and shared incubation that yields relatively high nest attentiveness. What may be unusual is the interval between laying eggs and the size of the egg.

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An Interspecific Foraging Association Between Nearctic-Neotropical Migrant Passerines in Bolivia

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ABSTRACT.—I present the first published record of a foraging association between Nearctic-neotropical migrant bird species during the austral summer in South America. I observed Barn Swallows (*Hirundo rustica*) and Cliff Swallows (*Petrochelidon pyrrhonota*) in February 2005 repeatedly foraging on aerial insects flushed by flocks of Bobolinks (*Dolichonyx oryzivorous*) settling onto soybean plants (*Glycine max*). Additional observations would be needed to distinguish this behavior between an opportunistic association and a commensal relationship. *Received 25 November 2005. Accepted 28 July 2006.*

Foraging associations assumed to be commensal between passerine species have been described within mixed species flocks (e.g., Hino 1998) and between non-flocking species (e.g., Willis 1972, Maxson and Maxson 1981, Robbins 1981). Here, I report the first documentation of a foraging association between two flocking Nearctic-neotropical migrant species during the austral summer.

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On 11 February 2005 from 0900 to 1000 hrs EST in San Juan, depto. Santa Cruz, Bolivia, ~100 km northwest of the city of Santa Cruz, I observed a flock of ~1,000 Bobolinks (*Dolichonyx oryzivorous*) foraging in soybean (*Glycine max*) fields. This large aggregation consisted of a series of smaller (30–400 individuals) flocks that moved across the field by landing in the soybeans for 15–60 sec, lifting to 1–3 m above the soybeans, flying 25–50 m, landing again, and repeating this pattern. After each landing, ~10–30 Barn Swallows (*Hirundo rustica*) and 0–5 Cliff Swallows (*Petrochelidon pyrrhonota*) captured aerial insects above the Bobolink flock, foraging 1–5 m above the soybean canopy for 5–10 sec. During two subsequent walking transects (400 m), perpendicular to and intersecting the flight path of the Bobolink flocks, I flushed Pyralid moths (*Omiodes indicata* Fabricius) with every step. The other insect species that flushed above the canopy, the adult stage of the velvetbean caterpillar (*Anticarsia gemmatalis* Hübner), was not abundant. No other insect species were observed flying